Paper No. 17

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte FREIDOON MEHRAD and
KYLE A. PICONE

Appeal No. 2001-1371
Application No. 09/120,712

ON BRIEF

Before FLEMING, RUGGIERO, and GROSS, Administrative Patent Judges.
RUGGIERO, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on the appeal from the final rejection of claims 1-7, 13 and 14. Claims 8-12 stand withdrawn from consideration as being directed to a non-elected invention.

The disclosed invention relates to a nonvolatile memory array structure in which source contacts have been moved to be in line with the drain contacts. According to Appellants (specification, page 3), rather than relying on source diffusion to provide a good conductive path, an extra arsenic implant is provided after the depositing and etching of a first polysilicon layer, which forms the floating gates, and before ashing of the resist. After the

arsenic implantation, a second polysilicon layer is deposited and etched to form the gate stack.

Representative claim 1 is reproduced as follows:

1. A nonvolatile memory array, comprising:

a region of semiconductor material, said region of semiconductor material including a plurality of memory elements, each memory element including a transistor having a source, drain, control gate and floating gate;

a plurality of horizontal source lines, parallel to and interspersed with parallel control gate lines coupled to predetermined ones of said transistors;

a vertical source line which intersects plural ones of said horizontal source lines coupled to predetermined ones of said transistors, said vertical source line being flanked by isolation structures; and

a dopant implanted under said control gate lines in said region of semiconductor material electrically connecting said horizontal source lines to said vertical source lines.

The Examiner relies on the following reference:

Mehrad 5,659,500 Aug. 19, 1997

Claims 1-7, 13, and 14, all of the appealed claims, stand finally rejected under the judicially created doctrine of obviousness-type double patenting over claims 1-9 of Mehrad.

Rather than reiterate the arguments of Appellants and the Examiner, reference is made to the Briefs[1] and the Answer for the respective details.

OPINION

We have carefully considered the subject matter on appeal, the rejection advanced by the Examiner, the arguments in support of the rejection, and the evidence of obviousness-type double patenting relied upon by the Examiner as support for the rejection. We have, likewise, reviewed and taken into consideration, in reaching our decision, Appellants' arguments set forth in the Briefs along with the Examiner's rationale in support of the rejection and arguments in rebuttal set forth in the Examiner's Answer.

It is our view, after consideration of the record before us, that the evidence relied upon and the level of skill in the particular art would have suggested to one of ordinary skill in the art the obviousness of the invention as set forth in the claims on appeal over claims 1-9 of the Mehrad patent.

Accordingly, we affirm.

[1] The Appeal Brief was filed September 7, 2000 (Paper No. 12). In response to the Examiner's Answer mailed December 5, 2000 (Paper No. 13), a Reply Brief was filed December 21, 2000 (Paper No. 14), which was acknowledged and entered by the Examiner in the communication dated January 4, 2001 (Paper No. 15).

Although Appellants nominally indicate (Brief, page 3) that the appealed claims are separately patentable from each other, Appellants have presented arguments only with respect to the feature of a dopant implanted under the control gate lines, a feature common to both of the independent claims. Accordingly, we will consider claim 1 as representative of all claims on appeal and claims 2-7, 13, and 14 will stand or fall with claim 1. Note In re King, 801 F.2d 1324, 1325, 231 USPQ 136, 137 (Fed. Cir. 1986); In re Sernaker, 702 F.2d 989, 991, 217 USPQ 1, 3 (Fed. Cir. 1983). Only those arguments actually made by Appellants have been considered in this decision. Arguments which Appellants could have made but chose not to make in the Briefs have not been considered [see 37 CFR § 1.192(a)].

With respect to representative claim 1, Appellants' arguments in response to the Examiner's obviousness-type double patenting rejection focus on the contention (Brief, page 4; Reply Brief, Page 2) that the claimed feature of a dopant implanted under the control gate lines of a semiconductor in a region which connects horizontal source lines to vertical source lines is not present in the claims of the Mehrad patent.

After careful review of the language of claims 1-9 of the Mehrad patent in light of the arguments of record, we are in general agreement with the Examiner's analysis and position as stated in the Answer. In particular, we are in agreement with the Examiner that, contrary to Appellants' arguments, the language in claims 1 and 6 of the Mehrad patent, which recites a continuous diffused region which extends under a plurality of pairs of horizontal stack conductors, corresponds to Appellants' claimed ". . . dopant under said control gate lines . . . ." We do not disagree with Appellants that the disclosure of the device of the present application is directed to an improvement over the device described in the Mehrad patent, both of which describe stack conductors with control gates and floating gates. As disclosed at pages 3 and 4 of Appellants' specification, this improvement involves an extra arsenic implant after the deposition of a poly 1 layer, which forms the floating gate, over which the poly 2 layer will be deposited forming the control gate. It is a basic tenet of patent law, however, that the claims define the invention and not the disclosure. In our view, the broadly set forth language of representative appealed claim 1, which requires merely an implant under the control gate lines of a semiconductor connectivity region, does not distinguish over the claims of the Mehrad patent

which recite a connectivity area having a continuous diffused region extending under plural pairs of horizontal stack conductors.

We note that, as pointed out by the Examiner (Answer, page 4), the Mehrad patent claims differ from the appealed claims in that a recitation of metal conductors coupled to the diffused region is included. Appellants' arguments however, which merely repeat the claim language related to the dopant implant, do not convince us of any error in the Examiner's line of reasoning (id.) that asserts the obviousness to the skilled artisan of connecting horizontal and vertical lines together through metal conductors or diffused regions. We would also point out that, contrary to Appellants' contention (Reply Brief, page 2), the present claimed isolation structure is set forth in claim 5 of the Mehrad patent which recites vertical conductors located between two field oxide (isolation) regions.

In view of the above discussion, since the Examiner's stated position has not been overcome by any convincing arguments from Appellants, we sustain the obviousness-type double patenting rejection of representative claim 1, and claims 2-7, 13, and 14 which fall with claim 11, over claims 1-9 of the Mehrad patent.

In summary, we have sustained the Examiner's judicially created obviousness-type double patenting rejection of all of the

claims on appeal. Therefore, the decision of the Examiner rejecting claims 1-7, 13 and 14 is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a).

AFFIRMED

MICHAEL R. FLEMING Administrative Patent Judge	)	
JOSEPH F. RUGGIERO Administrative Patent Judge	)	BOARD OF PATENT APPEALS AND INTERFERENCES
ANITA PELLMAN GROSS Administrative Patent Judge	)	

JFR/lp

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